Cooperative Water Program

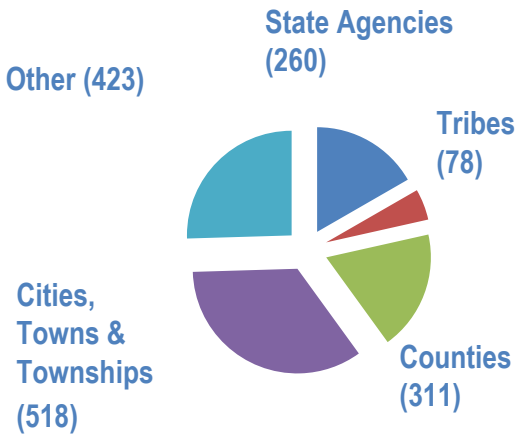
Background

The **Cooperative Water Program** is the Water Mission Area's "bottom-up, on-the-ground" program working in every State, protectorate, and territory of the U.S in partnership with nearly 1,600 local, State, and Tribal agencies.

Jointly planned monitoring and science efforts bring local, State, and Tribal water needs and decision-making together with USGS capabilities, including nationally consistent methods and quality assurance; innovative monitoring technology, models, and analysis tools; and robust data management and delivery systems.

Findings are thereby comparable across local, State, Tribal, and regional boundaries because data and analyses adhere to strict national protocols; water issues in a specific watershed, municipality, or State can be compared to those in other geographic regions and through time. In addition, large-scale syntheses and problem-solving in different regions and across the Nation are possible.

Stakeholders - The total number of Cooperators across the U.S. totaled nearly 1,600 in FY12. (Note: "Other" includes organizations associated with local, State, and Tribal agencies, such as regional commissions, State Universities and conservation, irrigation, and natural resource districts.)



"USGS is an indispensable partner with our agency, providing believable, relevant, scientifically sound and timely information that complements our State's water planning and management and conservation of our water resources. We depend on this long-term cooperation needed to monitor the availability of surface water and ground water and assess and model these resources across South Carolina so that our managers can maintain the appropriate balance among water-supply development, economic growth, and preservation of our critical fish and wildlife habitats." (Ken Rentiers, Deputy Director, SC Department of Natural Resources)

Program Strengths

- Built-in relevance to local, State, and Tribal regulatory decisions, management, policy, and jurisdictional disputes (**see pages 2 and 3)**
- Foundation for USGS hydrologic national monitoring networks and data delivery systems (**see page 4**)
- Visibility to emerging issues across the Nation
- Consistent data and science available for large-scale problem-solving of regional and national water priorities and initiatives.
- Innovative tools, models, and technology transfer across the Nation.

Funding

- FY12 Federal appropriation: $ 64.1M
- FY12 Reimbursable funding from localities, States, and Tribes: $ 155.1M
- FY12 Total program funds: $ 219.2M

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Assessments and Research - The Cooperative Water Program (CWP) conducts more than 700 interpretative studies annually, producing more than 375 information products in FY12 and resulting in a myriad of stakeholder decisions related to water availability, ecosystem health, water quality and drinking water, hazards, energy, and climate.

Selected Stakeholder Highlights

Water availability

Foundational and often long-term assessments and research on water availability were conducted through the CWP in all 47 Water Science Centers in 2012. (Learn more)

These studies provide critical input to the national water census in determining water use (including consumptive use), environmental flows, water budgets, and groundwater and surface water relations.

Development of statistical models and other assessment tools help to assess conditions over broad geographical areas (including those lacking monitoring) and to allow forecasting into the future.

For example, the Washington State Department of Ecology and Yakama Nation used USGS model-estimates in their groundwater management strategies to manage water rights and protect streamflows for sockeye salmon and other critical aquatic species, as well as to evaluate effects of agriculture water conservation, conjunctive use of groundwater and surface water, and artificial groundwater storage on future water availability.

Ecosystems

Focused studies through the CWP help to enhance our national understanding of how alteration of streamflow characteristics and land-management activities affect the ecological health of rivers and streams in different geographic regions across the Nation. (Learn more)

In general, jointly-planned efforts with partners through the CWP in more than 20 USGS Water Science Centers across the Nation are aimed at identifying critical streamflow characteristics; providing statistical tools and analytical approaches for predicting these characteristics; and understanding how streamflow characteristics and hydrologic alteration may change the structure of biological communities (fish, aquatic insects, and algae) in rivers and streams (access summary).

The monitoring, assessments, and research help water managers develop effective strategies to ensure that water remains sufficiently clean and abundant to support fisheries and recreation opportunities, while simultaneously supporting economic development.

Selected Stakeholder Highlights, continued

Water quality and drinking water

Assessments and research on water quality and drinking water were conducted in all 47 Water Science Centers in 2012 through the CWP. (Learn more). Many of these studies focused on emerging issues, such as pharmaceuticals contaminating drinking water; toxic polycyclic aromatic hydrocarbons(PAHs) in streams; and harmful algal blooms.

For example, CWP activities relating to the emerging and widespread issue involving toxic cyanobacteria were ongoing, completed, or in planning stages in at least 20 Water Science Centers in 2012 (access summary). Specific outcomes to these activities were improved decisions in water supply management and protection of public health through: (1) an enhanced understanding of environmental factors—including biological, physiochemical, hydrological, and meteorological—affecting the occurrence, fate, transport, and temporal variability of cyanobacteria and associated toxins and taste-and-odor compounds; (2) real-time monitoring strategies to develop early warning systems; and, (3) development of models and other assessment tools to predict occurrence

"Our partnership with the USGS has led to key insights that have helped us understand the scope of toxic contamination in the Columbia River, a key step to reducing contaminants and improving water quality." (Debrah Marriott, Executive Director of the Lower Columbia Estuary Partnership)

"The Arizona Department of Water Resources (ADWR) greatly values the USGS streamflow program in Arizona and the invaluable data that it provides. ADWR shares [USGS] concern for the future operation and maintenance of stations. Twelve stations threatened to be discontinued combine for more than 600 years of streamflow data, including three having more than 80 years of record each. These at-risk stations collect data from rivers and streams important to water management and flood monitoring in Arizona." (Sandra Fabritz-Whitney, Director, ADWR)

Hazards

CWP real-time data and analyses from thousands of streamgages and groundwater level monitoring help to inform emergency management decisions and water planning in every State in 2012. (Read more)

CWP also supports the development of standardized hydraulic models that convert forecasted flows into flood inundation maps, enabling emergency management officials and general public to see the expected extent of a flood before it occurs, reducing the possible devastating toll of floods on communities. (access flood inundation maps)

2012 also brought unusual drought conditions through much of the Midwest states, including Iowa, Nebraska, Minnesota, Illinois, South Dakota, and Wisconsin. In Iowa, for example, flows were less than 25 percent of normal streamflow conditions for the majority of the state. USGS crews made extra streamflow and groundwater level measurements in a number of states so that Cooperators had sufficient data to make water management decisions.

Energy

CWP jointly-funded activities were proposed or ongoing in 2012 in more than 15 States to establish baseline water quantity and quality observations and assessments as natural gas exploration and production accelerates among different geologic and environmental settings across the U.S. (access summary). For example, the USGS worked cooperatively with multiple partners, including the Arkansas Natural Resources Commission; Arkansas Game and Fish Commission; Arkansas Water Resources Center Duke University; and White County, Arkansas to monitor and assess streams, lakes, and groundwater in north-central Arkansas associated with the Fayetteville Shale, which is the fourth largest recoverable gas play in the U.S. (Learn more). A computer watershed model of hydrologic processes was developed to track movement of water and possible contaminants among the surface-water and groundwater resources.

Data Networks — The Cooperative Water Program (CWP) supports national hydrologic data networks, real-time capabilities, and data delivery across the Nation.

Groundwater

CWP supported groundwater measurements at more than 9,000 sites in FY12. About 1,200 are in real time. Real-time groundwater levels, such as measured at this platform in North Carolina, are critical for managers during times of drought.

Streamgages

CWP and 850 cooperators helped to support more than 70 percent of the 8,000 streamgages across the Nation in FY12. Nearly 100 percent are in real time, critical during flooding and to support emergency decisions to protect life and property. Other common uses include infrastructure design (roads, bridges), recreation, and water permitting.

Water Quality

CWP supported water-quality monitoring at nearly 4,000 stream sites and wells in FY12. Real-time water-quality sensors measure pH, water temperature, dissolved oxygen, specific conductance, and turbidity which can change quickly, particularly before, during, and after storms. Data are critical in day-to-day operations of reservoirs, and management of drinking-water intakes and beach health.